CALIFORNIA DEPARTMENT OF PUBLIC HEALTH
850 Marina Bay Parkway, Richmond, CA 94804

ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring Program

Monthly Marine Biotoxin Report

January 2009

Technical Report No. 09-08

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of January, 2009. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at several sampling stations along most of the southern California coast during January (Figure 1). These observations represent a slight increase in the geographic distribution of this

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during January, 2009.

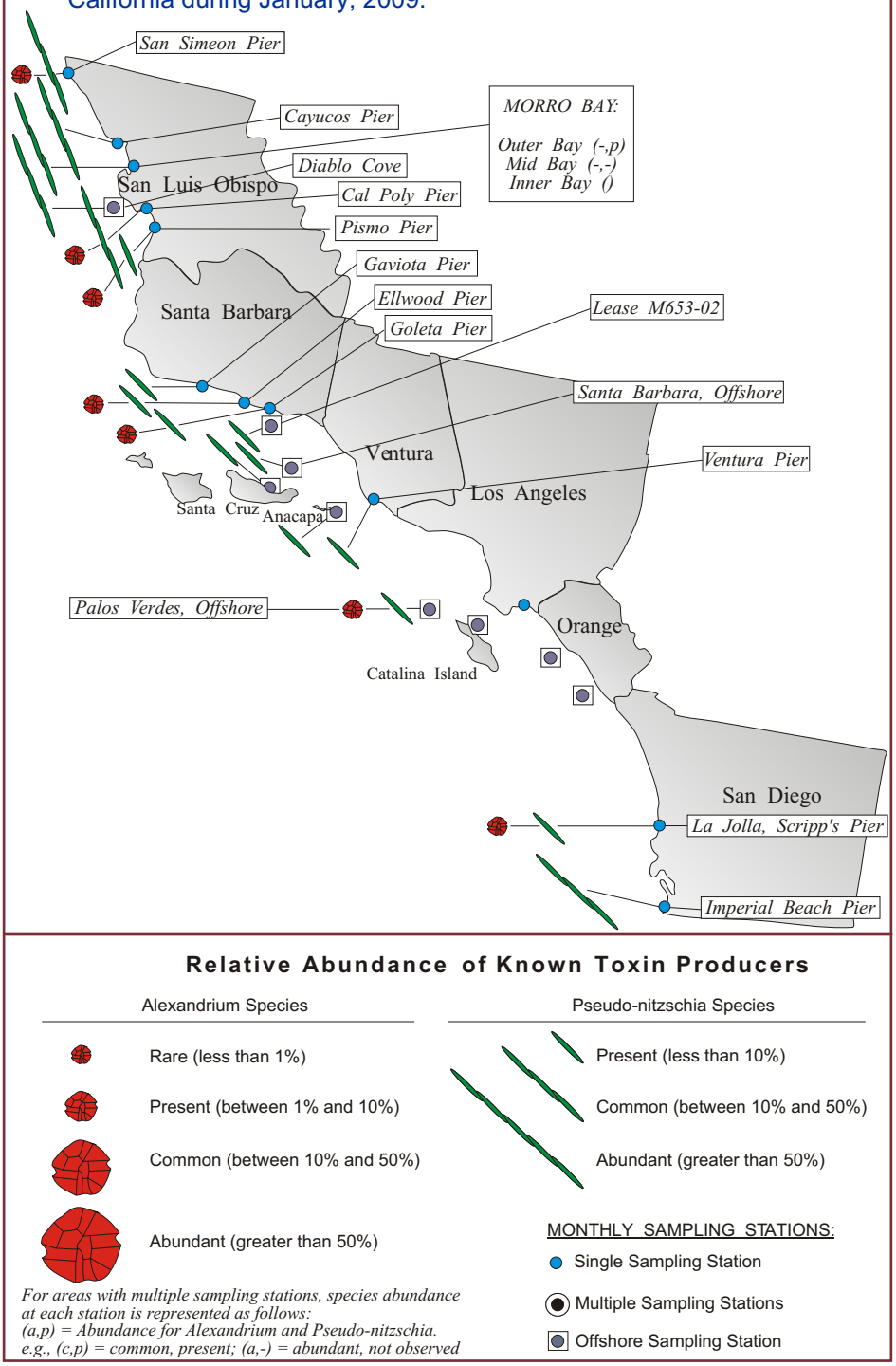
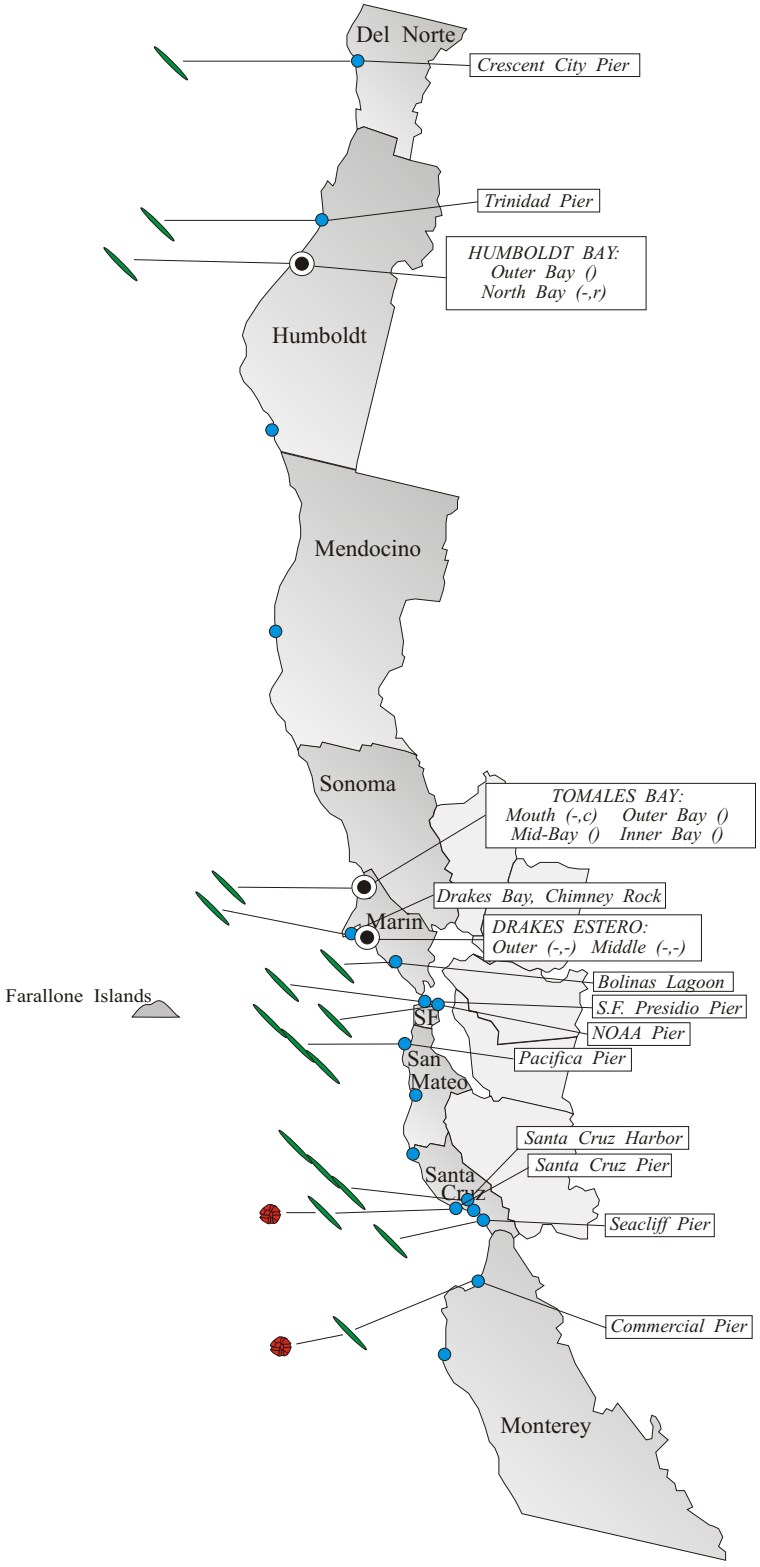


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during January, 2009.



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dinoflagellate when compared to observations in December. Overall the cell numbers were quite low, with the greatest relative abundance observed in a sample collected from Pismo Pier on January 29.

PSP toxins were generally absence during January. One mussel sample collected from Mussel Shoals (Ventura County) on January 23 contained a very low concentration of these toxins (36 ug/100 g).

Domoic Acid

Pseudo-nitzschia was detected at sites between San Luis Obispo and San Diego counties in January (Figure 1), but was absent from sites along Orange County. The distribution and relative abundance of this diatom increased compared to observations in December. Cell numbers were low at most sites, with the highest relative abundances observed in samples from offshore of Palos Verdes (January 13), Cayucos Pier (January 15), and Imperial Beach Pier (January 13).

Domoic acid was not detected in any shellfish samples collected along the southern California coast in January (Figure 3).

Non-toxic Species

Overall, phytoplankton diversity and abundance remained low in January along the southern California coast. Diatoms were

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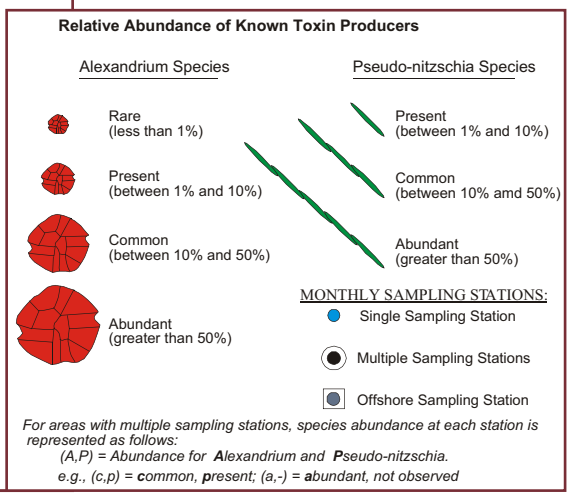
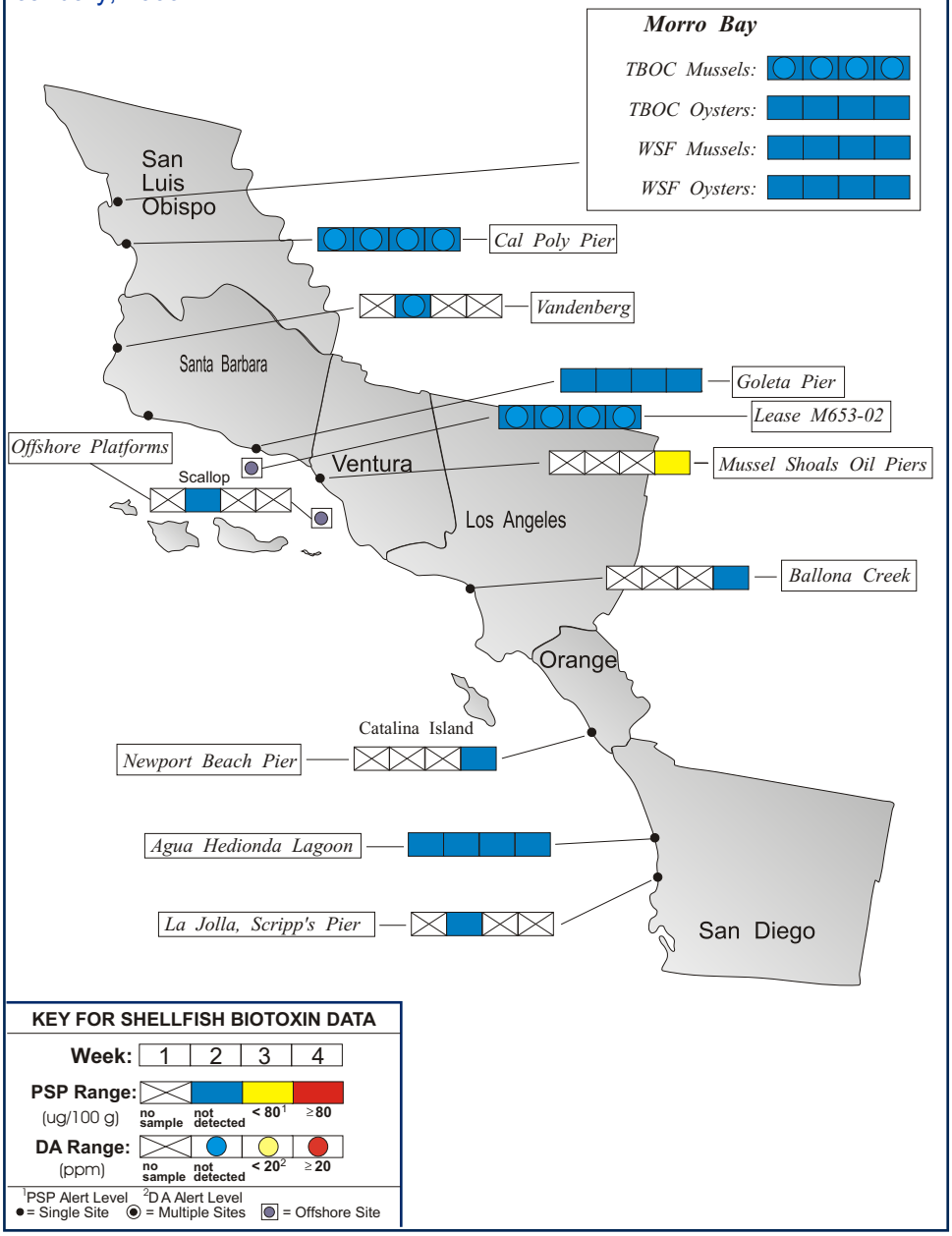


Figure 3. Distribution of shellfish biotoxins in Southern California during January, 2009.



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the dominant group, with *Chaetoceros* and *Thalassiosira* the common genera. The dinoflagellates *Prorocentrum* and *Akashiwo* were common at several sites as well. The highest relative abundances were observed in samples from Scripps Pier (January 12), offshore of Diablo Cove (January 15), offshore of Palos Verdes (January 21), and at Imperial Beach Pier (January 13).

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium numbers and geographic distribution remained very low in January (Figure 2), with observations of this dinoflagellate restricted to sites in Monterey Bay (Santa Cruz Pier, Monterey Commercial Pier).

Low levels of the PSP toxins were detected in sentinel mussels from Santa Cruz Pier during the last two weeks of January.

Domoic Acid

Pseudo-nitzschia was observed along most northern California counties in January (Figure 2). In general the relative abundance decreased slightly in most regions compared to observations in December. Cell numbers were low, with the

(Continued on Page 4)

The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Public Health, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide effort designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:
(510) 412-4635

For Recorded Biotoxin Information Call:
(800) 553 - 4133

(Continued from Page 3)

highest relative abundance observed in a sample collected by students at San Lorenzo Valley High School from Santa Cruz Harbor on January 16.

Non-toxic Species

A low diversity of diatoms, along with generous amounts of detritus, continued to be observed along the northern California coast in January. The diatom *Chaetoceros* was common at most locations, *Skeletonema* was common at sites in Santa Cruz County, and *Thalassiosira* was common inside Santa Cruz Harbor and at the Monterey Commercial Pier.

QUARANTINES:

The annual mussel quarantine, which began on May 1, was rescinded on schedule at midnight on October 31. The annual quarantine applies specifically to sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. Routine phytoplankton and biotoxin monitoring is maintained throughout the year, not just within the quarantine period. This allows the detection of unexpected increases in biotoxin activity outside of the routine quarantine period. The annual quarantine does not apply to the certified commercial shellfish growing areas in California, which are monitored intensively. All certified shellfish growers are required to submit at least weekly samples of

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Figure 4. Distribution of shellfish biotoxins in Northern California during January, 2009.

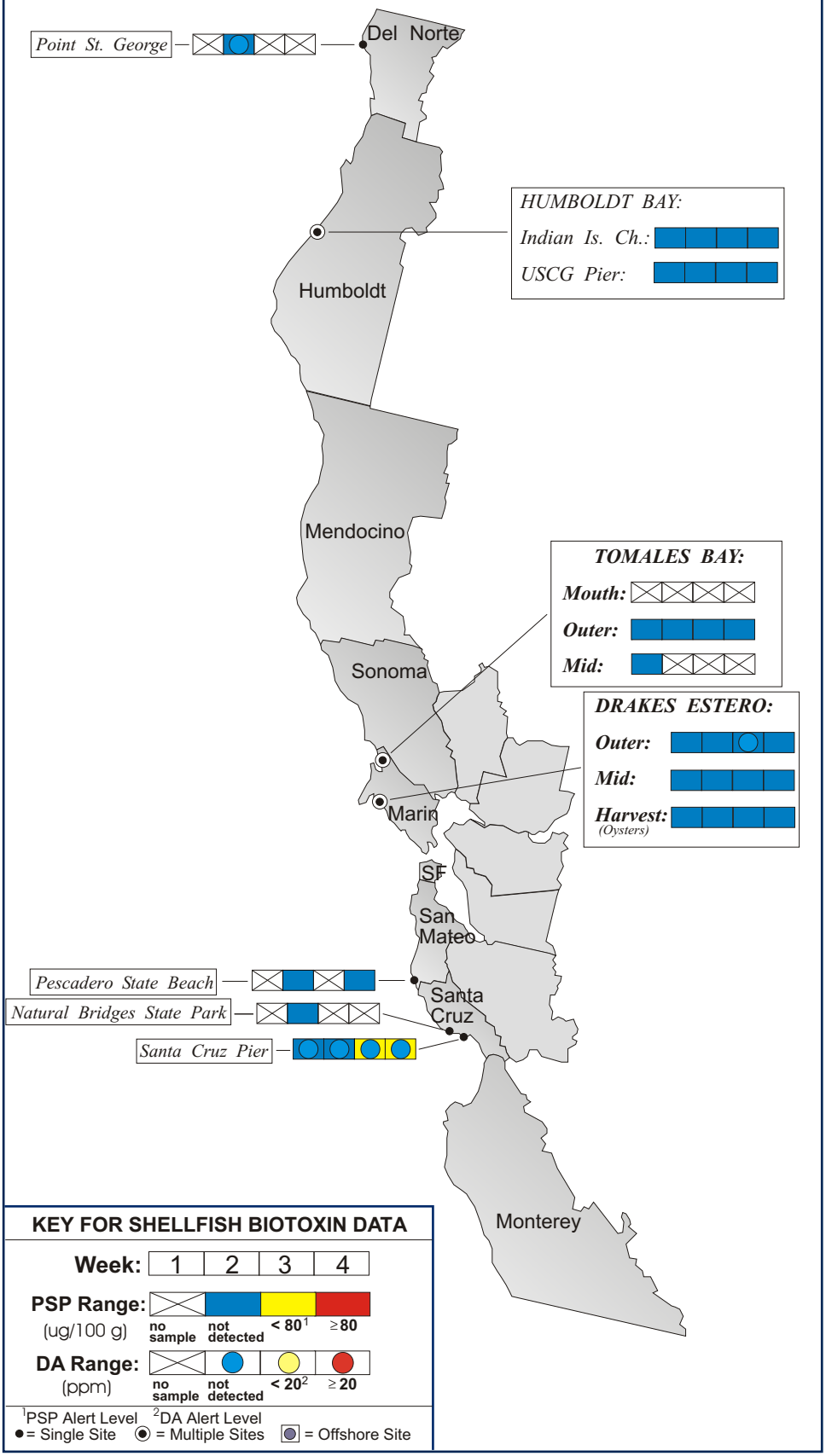


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during January, 2009.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	8
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	1
	Drakes Bay Oyster Company	16
	Hog Island Oyster Company	5
	Marin Oyster Company	4
San Francisco	None Submitted	
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	Santa Cruz County Environmental Health Department	1
	U.C. Santa Cruz	4
Monterey	None Submitted	
San Luis Obispo	Cal Poly	4
	Tomales Bay Oyster Company	10
	Williams Shellfish Farms	8
Santa Barbara	Santa Barbara Mariculture Company	8
	U.C. Santa Barbara	4
	Vandenberg AFB	1
Ventura	CDPH Volunteer (*Bill Weinerth*)	2
Los Angeles	Los Angeles County Health Department	1
Orange	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	4
	Scripps Institute of Oceanography	1

shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

Consumers of Washington clams, also known as butter clams (*Saxidomus nuttalli*), are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception of razor clams, are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams (*Siliqua patula*) are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat as well as in the viscera.

PSP toxins affect the human central nervous system, producing a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. These symptoms typically are followed by disturbed balance, lack of muscular coordination, slurred speech and difficulty swallowing. In severe poisonings, complete muscular paralysis and death from asphyxiation can occur.

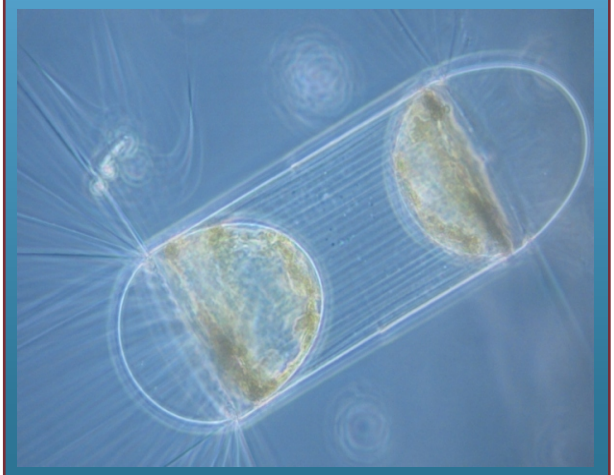
Symptoms of domoic acid poisoning can occur within 30 minutes to 24 hours after eating toxic seafood. In mild cases, symptoms of exposure to this nerve toxin may include vomiting, diarrhea, abdominal cramps, headache and dizziness. These symptoms disappear completely within several days. In severe cases, the victim may experience excessive bronchial secretions, difficulty breathing, confusion, disorientation, cardiovascular instability, seizures, permanent loss of short-term memory, coma and death.

Any person experiencing any of these symptoms should seek immediate medical care. Consumers are also advised that neither cooking or freezing eliminates domoic acid or the PSP toxins from the shellfish tissue. These toxins may also accumulate in the viscera of other seafood species such as crab, lobster, and small finfish like sardines and anchovies, therefore these tissues should not be consumed. Sport harvesters are encouraged to contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.

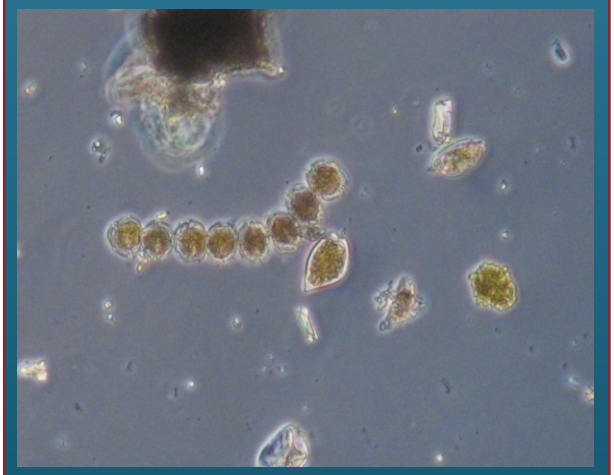
Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during January, 2009.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	3
	California Department of Fish and Game	2
	Humboldt State University	1
Mendocino	California Department of Fish and Game	1
Sonoma	None Submitted	
Marin	CDPH Volunteers *(Brent Anderson,Cal Strobel)*	4
	Drakes Bay Oyster Company	8
San Francisco	CDPH Volunteer (*Eugenia McNaughton*)	3
	San Francisco Health Department	4
San Mateo	CDPH Volunteer (*Kathleen Abadie*)	4
	San Mateo County Environmental Health Dept.	2
	The Marine Mammal Center (*Stan Jensen*)	3
Santa Cruz	San Lorenzo Valley High School	3
	Santa Cruz County Environmental Health Dept.	3
	U.C. Santa Cruz	4
Monterey	Monterey Abalone Company	4
	Marine Pollution Studies Laboratory	1
San Luis Obispo	CDPH Volunteer (*Renee and Auburn Atkins*)	1
	Cal Poly	10
	Monterey Bay National Marine Sanctuary	5
	Morro Bay National Estuary Program	1
	Tenera Environmental	4
	The Marine Mammal Center (*Tim Lytsell, P.J. Webb*)	11
	Tomales Bay Oyster Company	5
Santa Barbara	CDPH Volunteer (*Sylvia Short*)	4
	Santa Barbara Mariculture Company	4
	U.C. Santa Barbara	4
	CDPH Marine Biotoxin Program	1
Ventura	CDPH Volunteer (Fred Burgess)	2
	Santa Barbara Channel Keeper	4
	National Park Service	2
Los Angeles	Catalina Island Marine Institute	1
	Los Angeles County Sanitation District	4
	Southern California Marine Institute	1
Orange	Orange County Health Care Agency	1
	Ocean Institute	1
San Diego	Scripps Institute of Oceanography	4
	Avian Research Associates	3

PHYTOPLANKTON GALLERY



The diatom Corethron has been present in low numbers in recent weeks.



A rare eight-cell chain of Alexandrium, observed in a sample from Monterey Bay.

Occasionally the phytoplankton samples contain pleasant surprises, like this larval stage of a polychaete worm.